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PATTERN AND SHAPE

by Kurt Rowland

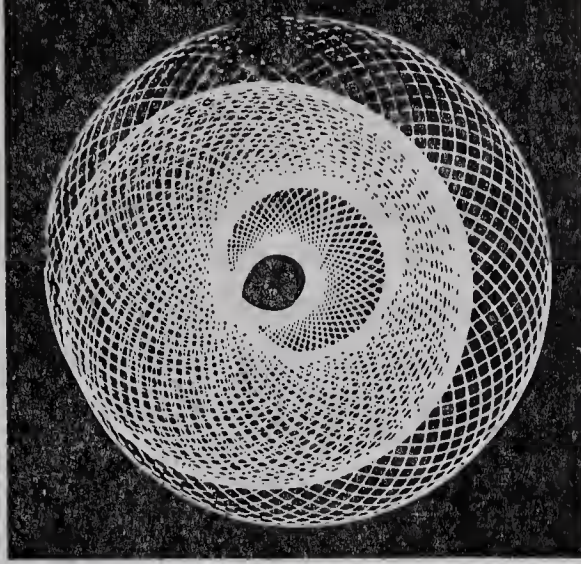
NOTES FOR TEACHERS

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LOOKING AND SEEING

Part 1



PATTERN AND SHAPE

Notes for Teachers

by Kurt Rowland MSIA



Ginn . London
Cheshire . Melbourne

I particularly wish to thank Mr. A. P. Davis, formerly Chairman of Ginn and Company, and Mrs. I. L. Shelton, the Editorial Director, for their encouragement and advice during the preparation of these books, and also the editorial staff of Ginn for nursing a difficult project and for supplying unstinted help and guidance.

The list of picture sources on pages 55-63 will indicate the many people who have provided me with photographs to illustrate the books, and I should like to offer all of them my sincere thanks. Unfortunately, however, it has not been possible to trace every copyright owner.

K. F. R.



© GINN AND COMPANY LTD 1964

Fifth impression 1969

GINN SBN 602 20613 8

CHESHIRE SBN

First published in Great Britain by Ginn & Company Ltd
18 Bedford Row, London W C 1

Published in Australia by F. W. Cheshire Publishing Pty Ltd
346 St. Kilda Road, Melbourne
142 Victoria Road, Marrickville N S W

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INTRODUCTION

1 The purpose of this course

Looking and Seeing, a course of four books, provides a training in visual understanding and discrimination: a course of visual education. Although in recent years much has been said and written about the importance of visual education, no textbook on the subject has yet appeared. Until now, anyone interested in teaching it has had to make up his own course or resort to books which deal, often from a specialist's point of view, with various aspects of vision, design, engineering, town planning, and so on. This is not only a complicated process in itself but involves a task of abstraction comparable to teaching first year biology from erudite books intended for medical students or biochemists.

The four parts of Looking and Seeing are, it is believed, the first school textbooks of visual education ever to be published. They present basic visual knowledge in easily graded chapters and, like so many books in other school subjects, include exercises involving activities of various kinds.

This is *not* a course of design appreciation with vague descriptions of well-designed objects. The author believes that the problem must be attacked at a deeper level, so that pupils will eventually acquire a foundation of knowledge on which to base sound visual judgments of their environment. Such informed judgments will replace the bewilderment and indifference so often found at present. The richer experience of the physical world made possible through Looking and Seeing will allow readers to enjoy new outlets for self-expression and will stimulate creative and positive attitudes.

2 The plan of the course

The organisation of Looking and Seeing arises from a simple progression. Parts One and Two could be considered as a grammar of vision, in which the elements of which our visual world is composed are discussed and analysed. Parts Three and Four show how this grammar may be applied.

PART ONE/PATTERN AND SHAPE

Readers are encouraged to look at the world around them. Patterns feature prominently. They serve as a useful means of explaining and relating other concepts: for example, environment, social forces, character. In the last two chapters the idea of form is introduced.

PART TWO/THE DEVELOPMENT OF SHAPE

The story of form is continued, but on the level of technology. Tradition and modern materials impose their own aesthetic on the objects into which they are formed. This aesthetic is guided by a natural development, rather like the evolution of natural organisms, in which function asserts its supremacy.

PART THREE/THE SHAPES WE NEED

This part deals mainly with the two strands of design: the purely mechanical and mathematical, and the human. Ideally, the man-made world should be a synthesis of the two. This synthesis provides a visual language.

PART FOUR/THE SHAPE OF TOWNS

The town is considered as the most complicated and ambitious man-made shape. Basically we are here still grappling with design problems which confronted the early craftsmen, but on a very much vaster scale, one which is likely to increase in complexity within the next generation.

PLACE OF LOOKING AND SEEING WITHIN THE SCHOOL CURRICULUM

The subject matter of this course will be better understood when related to other school subjects. The relationship between society and pattern can be the subject of a historical study, the relationship between man's surroundings and the patterns he produces could be linked to geography. If crafts such as pottery or weaving are practised in the school a

fruitful liaison could be established. The diagrams or drawings derived from a study of everyday patterns can be used in art lessons. In this way a cross-fertilisation will ensue; not only will the course gain in meaning through association with other subjects, but it will surely enrich those subjects as well. It will also introduce the idea that all fields of knowledge are somehow part of the same endeavour.

THE EXERCISES

The exercises at the end of each chapter form an essential part of the course. If possible these should be executed in a book, or else on sheets of unruled paper or cartridge paper and kept in a folder. It is most important that past work should be available for reference, so that the growth of the pupil's ideas and vision can be surveyed by teacher and pupil. Furthermore, such notebooks should never be approached with any kind of formality. On the contrary, the children should be allowed to enter spontaneously, in graphic or literary form, any observations they think relevant, and to add any subsequent observations from time to time, even when this conflicts with ideas of neatness. The exercises are not meant simply to implement rules derived from the lessons; they aim to stimulate further ideas and individual initiative. This stimulation must be considered the most valuable part of the course. The subject matter of Looking and Seeing cannot possibly be absorbed in the same way by people of different temperaments and abilities. Some notebooks will undoubtedly be stronger on the literary side than on the visual, others may be more visually discriminating, but all readers will share an increase in creative power.

3 Why visual education is needed

Most of us lack the basic instruction to enable us to decipher the visual elements of our surroundings. We welcome the third-rate into our homes. The modernity or novelty of an object often blinds us to its ugliness. We look but do not see.

If we are unable, in the choice of our own private goods and chattels, to distinguish between good and bad, to sift the

brilliant and the exquisite from the vulgar and the abominable, how much less are we able to do this on a large scale, on the level of the community? Is not our visually chaotic world a monument to our visual ignorance at all levels?

A LIVING TRADITION

Craftsmen over the ages developed skills based on profound sympathy with the material with which they worked and on a thorough understanding of the function of the objects they made. The builder, for example, knew the character of the local building materials as intimately as he knew and understood the character of the landscape from which they were derived and in which he played as a child and worked as a man. He constructed forms to make the most efficient use of these materials, and his buildings were adapted in many subtle ways to the climate, to the countryside and to the special needs of the inhabitants.

In order to get as much help as possible from the materials they were using the early craftsmen had to be highly sensitive to the character of those materials. Continued contact with the materials and with methods of production sharpened their sensitivity, and produced a tradition within which each succeeding generation lived and worked.

People brought up in such conditions do not worry about 'styles' or 'art' or 'beauty'; they continue the vernacular tradition which they inherit and of which they themselves are part. But the tradition is not allowed to remain stagnant. New materials and new techniques are developed and absorbed. New forms are devised for new functions. This process can be compared with organic development which aims at perfection within its own limitations.

From individual strands a whole culture is created: a concerted effort of people working in a way natural to them, by making the most of the opportunities offered by their environment.

The objects produced within such a tradition help each member of the community to extend his faculties, to attack his physical environment and to satisfy his physical urges such as hunger and cold. But these urges with which man is endowed for the purpose of survival are supplemented by

other unconscious drives of a subtler nature and whose purpose is broadly speaking very similar. Instincts and emotions, such as fear, love and anxiety, also have important parts to play in the life of the human organism and they, too, clamour for recognition. But they cannot be satisfied by the making of tools; their requirements are of a different order. The mechanism which man has evolved to satisfy them is generally given the name of art. What tools achieve for our physical make-up, art achieves for our more deep-seated instincts and emotions. We could, therefore, refer to art as an emotional tool, or better still, as an arsenal of emotional tools.

We can assume that in the mind of primitive man the tools he used in tilling the fields and the magical objects and rites through which he obtained the fertility of those same fields, were of equal importance. Man's arsenal of material tools has always had this companion arsenal of emotional tools, art, which can be seen as a directing influence in everything man makes and does. Material progress alone can satisfy no more than a part of human requirements.

Yet these two activities, the material and the emotional, cannot be isolated. An arrow used as an aid to hunting is ultimately a means of stilling hunger, but the mere possession of it may also allay a man's anxiety about his personal safety. It may, therefore, become an emotive symbol of power. A house is a place of shelter and as such it fulfils the function of a material device, but does it not also provide a spiritual refuge?

CRAFTSMEN AND ARTISTS

The difference between artist and craftsman is only a question of emphasis. Both work within the living tradition in roughly the same way, using existing tendencies and currents, material, mental or emotional. Their products are created in an organic way, as though evolved by natural selection. They are 'right', that is to say efficient, for the times and the community to which they belong. To interchange them in time or place can only lead to decreased efficiency. It may be objected that this is too narrow an interpretation of artistic creation, that artists must be given the freedom necessary for their inspiration to flower. This, however, is not borne out by

historical facts. Artists, like other creative men, such as scientists, are bound hand and foot by the times and the community in which they live, not only by the level of technological achievement, but also by the mental climate and the current of opinion. Rembrandt's paintings could not have been conceived at any other period in history, Freud's ideas would have been impossible even twenty or thirty years before his time. We can date the works of creative minds not only by their style but also by the mode of thinking and feeling they betray.

A child identifies the emotions which an object causes in him with the object itself. He may experience it as a 'good' or a 'bad' object. Much later in life he will still differentiate between sad houses and laughing houses, good chairs and nasty chairs. Primitive people behave in much the same way, and this transference of emotion, an act of magic, is given visual form through anthropomorphic and animal shapes of vessels and tools, decorations in the shape of eyes or magic symbols, and so on. In this way man comes to terms with the objects which constitute his immediate physical environment. Through art his purely mechanical relationship with his tools is refined and enriched, made subtler and more rewarding.

THE FUNCTION OF ART

The function of art may be defined as that of a bridge between the two levels of human experience, the conscious and the unconscious, acting as a means of communication between them. In a work of art messages pass in two directions, from the conscious to the subconscious, and from the subconscious to the conscious. But since conscious and subconscious speak different languages the messages must be interpreted before being understood. In a work of art the subconscious is given a view of the outside world in its own terms, and the conscious mind a picture of the inner world in the idiom of reason. Art is a means of communication in more senses than one; it is the great interpreter. The subconscious is made up of repressed instincts which the ego keeps away from the world of reality. Neuroses are due to these repressions. The conscious mind is unaware of the subconscious drives. The need for an interpreter then becomes obvious.

Only through the mediation and interpretation of art can an understanding between the two be reached. A similarity of purpose between the conscious and the unconscious is the ideal state of normality but this is rarely achieved. By means of art a common purpose may be found, neuroses relieved, and a harmonious and balanced mode of living arrived at. It must be understood that art's function is that of an interpreter; it cannot *enforce* a reconciliation between the conscious and the subconscious. Art cannot offer remedies, as is sometimes attempted in political and social art; *it is itself the remedy*.

It cannot be said that the mere presence of art, even when it works in the most perfect way, will eliminate all our difficulties, but it will certainly make the most of our potentialities. When it functions imperfectly and interprets and passes messages in one direction only, it may arouse a response at only one level, while stresses of various kinds will be experienced at the other. When art ceases to function altogether, man is thrown into a state of purposeless confusion, with both conscious and unconscious stresses.

Two points arise from this. First, the more efficient the communication and interpretation between the conscious and the unconscious made possible by a work of art, the greater will be the satisfaction and benefit to both creator and onlooker, and the more efficient it will be in bringing about a state of balance. Secondly, what applies to the individual also applies to society as a whole. A period of art, or what is often called a 'style' of a period, has a function for society similar to that of the work of art for the individual. It brings thought and feeling together. A society in which artistic activities are at a low level will sooner or later become neurotic—a 'sick' society.

THE TRADITION BREAKS: THE INDUSTRIAL REVOLUTION

The living, organic tradition of earlier ages was broken by the Industrial Revolution. Practical and mechanical considerations became of overriding importance. Man's surroundings, his countryside, his towns and villages were ravaged without any respect for the natural order of things. In the name of expediency the Industrial Revolution created new

environments for the operators of the new machines; environments which were as bad for the human body as they were oppressive to the human spirit. The human scale, such a vital factor in the design of the human environment, was often totally absent from the new machines and townships. Gradually, as succeeding generations were born into this industrial world, they became farther and farther removed from the tradition of their forefathers. They lost their traditional skills and sensitivities and the judgment and self-assurance which in earlier generations were normal human attributes. The Industrial Revolution had created not only a new society, but also a new man. By undermining respect for the natural order of things it brought about the disruption of the wholeness of life. No longer were the maker's instinctive creative faculties engaged, for the life of the imagination became divorced from reality and the things man made were devoid of any emotional justification. With each successive generation the rift between thought and feeling grew wider.

TODAY'S NEED FOR A NEW VISUAL LANGUAGE

This dangerous state of affairs has been increasingly recognised from Morris to Buchanan. The problem has reached such proportions that many critics see in the absence of a solution the probable disintegration of our society. But whatever drastic and far-reaching reforms we carry out, many people believe that ultimately only art can bring about a permanent integration of life. Artists, through their special gifts—receptivity, imagination—can work out our emotional problems through the many art forms they have available: forms such as architecture and industrial design, painting and film. Herbert Read calls the artist 'the conscience of the community'.

But we must not think that by giving artists a free hand in the reconstruction of our world we could transfer all responsibility, and expect all our difficulties to be sorted out. Art cannot flourish in an indifferent mental climate; before art can reach its true stature we must have an enlightened, knowledgeable and involved audience. Only in a society in which informed judgment of all art—from town planning to jewellery—is universal will the artist be put on his mettle;

such a society will unconsciously set the standards of excellence and achievement and spur the artist to outstrip himself.

Form, texture, pattern, colour are the artist's natural means of expression, but few of his public today have any feeling for them. Cut off from any living tradition, surrounded by meaningless and frustrating objects, they cannot understand the language of art and no longer possess standards of judgment or any sympathy for the work of artists and craftsmen. This then is the vicious circle of our situation. The effects and stresses of the mechanistic forces of our civilisation can be overcome only by art, but art can thrive only in a mental climate which demands it and possesses standards of judgment. This demand is at present negligible owing to the public's dulled sensibilities, which are in turn caused by the sustained and cumulative effect of the mechanistic forces. Our vicious circle can be broken only by education.

EDUCATION MUST BE THE REMEDY

The great value of art and craft teaching lies in the fact that it gives children a feeling for the creative process and provides an important stimulus to the exploration and understanding of the material world. It is a means of personal expression and an emotional outlet. Taught on the basis of creative experiment rather than on academic lines, it must form an important part of any educational system which sets out to develop each individual's resources to the fullest extent. The limitations of art and craft teaching are obvious. Those subjects which involve larger and wider issues, such as architecture and town planning or industrial design, fall outside the scope of such teaching altogether. The purely instinctive approach to materials and shapes is not adequate beyond a certain stage of development; it must be allied to an awareness of basic concepts as soon as this is feasible.

Many arguments have been advanced for the creation of a form of visual education within the framework of general education. The most important of these come from L. Moholy-Nagy and Walter Gropius, both members of the Bauhaus, an institution which aimed at providing an education for the craftsmen, designers and artists of our age. Their methods have since passed into common usage; they have

become the tradition of the twentieth century. Moholy-Nagy advocates an education which would aim at both the intellectual and emotional growth of the individual. His educational plans are too vast to be discussed here in detail but their essence lies in the use of art to further the needs of the individual and of society, so that in the end we may arrive at the state when 'the aim is to produce for human needs, not for profit'. Gropius's idea of education so that the full potential of each person may be realised is very much the same. He criticises the 'trade mentality' of our age which has 'superseded the desire for a balanced life as it informed former periods'. He sees the casual treatment of the visual arts as characteristic of that trend. He speaks of a Language of Vision which enables the artist to express his often paradoxical thoughts and feelings in visible terms. It is also the key to our understanding of his message. 'Yet before it can become common to all it must be made valid through general education.'

It is precisely such a visual language, common to all of us, linking our thoughts and feelings, designed for conditions in the second half of the twentieth century, which is the main concern of Looking and Seeing.

**NOTES ON PART ONE:
PATTERN AND SHAPE**

Chapter 1 Thinking about patterns

Patterns in relation to materials, background and society. Patterns need not be accurately repeated but should be harmonious. (The word 'pattern' is used in a very wide sense: an arrangement of shapes, from atoms to houses.)

Everything can, in its barest essentials, be reduced to a pattern; most people can recognise patterns without any difficulty, even when other visual elements elude them. In Chapter 1 patterns are not considered simply as patterns but are used as a reason for looking at our surroundings in a new way.

Pattern is to many people something added to an object already in existence, an afterthought bought by the yard. The relationship between pattern and material is not generally understood. Chapter 1 begins by stressing the important principle that a consideration of any pattern must include the nature of the material and the process of working it. The patterns of expanded metal (4) show this quite clearly. The sheet of metal is slit and then drawn apart. In this way many different patterns, both structural and decorative, can be produced, but all of them must be the outcome of the same process. Tie and die patterns (1), in this case made by stitching instead of tying, woven patterns, potato cut patterns (5), the patterns of stone work (6) and basketwork (7), all show the direct influence of the material or the method used in working it.

pages 4-5

The second principle concerns the origin of patterns. A pattern is a translation of a visual impression, so it follows that it will in one way or another reflect the world in which we live. Sometimes the reflection is fairly direct and faithful, but in most cases it has to be adjusted to the demands of the material or the aesthetic requirements of the pattern-maker.

pages 6-7

Although the photographic method of designing may appear to be a purely mechanical procedure, it is one that is full of pitfalls. It demonstrates in simple terms the creative process. A part of reality is chosen by the artist, transformed through his sensibilities and his knowledge of the medium, and eventually given concrete form. At many stages of this process decisions have to be taken, every one of which will influence the appearance of the final product. Not one stroke

pages 8-9

of the designs on these pages was drawn or painted by hand. All were arrived at by a sensitive manipulation of mechanical forces. Pictures 5-8 show the development of a pattern where, as in all good patterns, the demands of the material and the aesthetic requirements of the artist are equally satisfied.

page 10

The material and the environment of the designer can be seen and easily understood, but there are other forces at work which also have an influence on the appearance of patterns. Social and economic conditions, and the mental climate of any particular period can be traced in the patterns which they produce. Modern patterns are informal compared to Victorian patterns, both in arrangement and execution. Our great grandparents would not have considered mudcracks 'beautiful' and would have found them unsuitable for use in decoration.

page 11

Most children when asked to draw a pattern will start by constructing a grid, which is then filled in, square by square, with the same motif. This attitude is based largely on preconceived notions and conditioned by the many ill-conceived machine-made patterns which surround us (see page 21, Pattern and Shape). We must attempt to eliminate this attitude for it indicates that the child's visual perception and expression work in clichés. The search for patterns in one's surroundings should be conducted in a spirit of real adventure and enjoyment; only in this way can a child be led from the most obvious examples of pattern in his immediate environment to the less orthodox ones of biological forms, landscapes, markets and interiors. Markets are especially rich in patterns and must be considered good hunting grounds. Wherever possible children should be encouraged to draw the patterns they see, and *they* must be the judges of what forms a pattern, that is, how much of the thing they see should be recorded in order to show the pattern. Although good photographs should be used to show the existence of patterns and can also be used for the purpose of pattern finding and pattern drawing, pupils should be encouraged whenever possible to find their own patterns in nature.

pages 12-13

Distorted and broken patterns are now considered, as a further means of explaining that a pattern does not imply a regularly repeated motif. A pattern seen from a viewpoint where it is distorted by perspective often gains in interest,

and its parts are brought into a new and subtle relationship. In this way distortion can be exploited as a harmonising force. We can define pattern as an arrangement of shapes between which there is a definite relationship. Relationship implies comparison. Two objects which have nothing at all in common make comparison impossible. They are unrelated. On the other hand a relationship between two identical objects is unsatisfactory; it makes comparison superfluous. It is however only by comparing objects that we can establish any relationship between them. An ideal pattern consists of different yet related shapes. We could call them variations of a theme, the same thing seen in different ways, different interpretations of the same idea. The relationships between the elements of a pattern are often more complicated than in diagram 5. Sometimes they can only be sensed and therefore it is impossible to judge patterns on a purely intellectual basis.

In many ways this first chapter is representative of the whole book. It attempts to induce children to look at familiar objects in a new way. A number of topics which will be the subject of later chapters have been introduced. Many activities can be developed from the ideas discussed: an examination of patterns according to their suitability to the materials and processes employed, a visit to a factory or workshop where patterns are produced (for instance wallpapers, fabrics, plastics), a museum visit to study patterns on different materials and those derived from different backgrounds.

page 14

EXERCISES

page 14

Exercise 3 on natural patterns and 5 on the Greek vase will be found particularly valuable in encouraging observation. Personal experience of pottery making and decoration will help children to answer question 5, which should lead to interesting discussion: for example, how modern production methods often deprive the designer of contact with actual production.

Chapter 2 Patterns are caused by materials

A good pattern is linked to its material and the method of its production. To imitate in any material the patterns produced in other materials may lead to bad patterns.

The influence of material on pattern, already introduced in Chapter 1, is here discussed in greater detail. In order to get a clearer understanding of man-made patterns, their origin is examined.

Life implies change: nothing can be considered as a permanent state or a final solution. Any organic pattern or shape is the outcome of a long series of earlier patterns and shapes, all tending towards perfection but without achieving it. Any organic pattern or shape must be considered an evolutionary stage which will change as conditions change. Future changes can be anticipated but not accurately envisaged. New forms, as they develop, will be understood only if the material processes and thought processes which have contributed to their evolution are understood.

pages 16-17

Patterns are a direct outcome of the nature of their materials, and although many materials and processes have changed in the course of history, as have conditions of life, the principles which govern the creation of patterns do not change. Basically we are not much different from the people who created early patterns (4, 5, 7). Patterns are man's reaction to varying sets of circumstances and conditions. We can understand the reactions of these early pattern-makers; given similar conditions we should ourselves react in much the same way. The different character of different ages in history must be seen as the outcome of what is basically the *same* reaction to *changing* conditions. To understand man-made objects it is necessary for us to take this reaction into account.

pages 18-19

When the shape and pattern of an object are created by the same person one can sense its unity. Both pattern and shape express the same mind, conscious and unconscious, and the same attitude to the material, whether in shaping it or decorating it.

Patterns can be shown to have their origin in the nature of the medium. They may even arise from flaws turned into virtues (1, 4, page 16, 6, page 17). But function also plays its

part in influencing patterns (1, 2, page 18). A good pattern is a synthesis of these two elements: material and function. In addition to the examples in this chapter, relevant illustrations in Chapter 1 can be referred to. Others, outside the book, will come to mind: the ring-like patterns of silversmith's work, hammered pewter, the patterns of stone implements, the dovetailing in wooden objects.

No attempt is made to define what constitutes beauty, but on looking at the objects pictured on these pages, objects in which the different forces which produced them are in the right relationship, the implication will be clear. This fusion can be achieved only through a deep understanding of the materials and processes employed. The purpose to which an object is to be put is equally important and will be discussed in more detail later in the course.

There seems no doubt that ease of manufacture makes for lack of sympathy with the material. Our superior techniques encourage us to disregard the nature of the material, once of paramount importance in manufacture. Even in industries where human skill still plays an important part (workers in the pottery industry still refer to the 'living clay') a lack of sensitivity is growing. In our age of mass production and specialisation, only a few people understand the whole manufacturing process. They are the creators while the rest merely carry out the master plan. No longer can a craftsman indulge the luxury of sharpening his sensibilities to the character of the medium, sensing its demands and manipulating them so that they work on his behalf. Today his sensitivity would in many cases be an obstacle to his efficiency as a worker, for it would make him rebel against many of the pointless and vulgar patterns with which so many modern objects are 'decorated'. One insensitive industrial designer, unlike his predecessor of an earlier age, can shower hundreds of inferior objects upon a helpless clientele.

pages 20-23

New materials require new skills and their patterns must reflect the different nature of these materials and techniques. Imitations of patterns belonging to older, different materials, or different processes, can lead nowhere. Those other patterns were the outcome of man's sensitivity to particular materials and processes. To impose such patterns on materials which have nothing to do with them breaks the relationship

between material and process. The result is chaos. We can compare this to the diagrams of harmonious and chaotic patterns (5, 6, page 13). The inferiority of so many of our industrially produced goods is due not so much to mass production as to the lack of relationship between their elements.

The patterns on page 21 are objectionable because they are unrelated to their materials. None of them is caused or inspired by the materials, so that their essential qualities are not brought out. Pottery, glass and fabric seem to be condemned to suffer these patterns instead of being enriched by them. The checks on the fabric (6) are printed to give a woven effect, instead of utilising the possibilities of printing to create its own patterns. The glass patterns (5, 8) are inadequate in themselves when considered in relation to glass, and vitiated by the transparency of the glass which allows the pattern on the other side of the tumbler to shine through and create an unpleasant overlap. This very transparency could have been made use of to enrich both pattern and material. The importance of children understanding these basic principles cannot be over-emphasised. These bad patterns may be criticised in the first place then because they show no respect for their materials. (Comparison with the good patterns on pages 19, 22 (4, 5), 23 and 24, will help, and pictures in Chapter 1 may also be referred to.)

Secondly it can be pointed out that these are disjointed patterns and do not make sense, just as disconnected words, unrelated by grammar and syntax, are not comprehensible. In a pattern all the parts must be in a harmonious relationship (1, 2, page 20). The individual parts of the patterns in the pictures on page 21 are arbitrary, inexpressive of the objects they are meant to represent, unrelated to each other, or to the shapes on which they appear, or to the surface texture or the material. All the items on page 21 were obtained at suburban shops and are typical of what most people are offered at local shopping centres. The true characters of these objects and their patterns do not come out adequately in photographs. If at all possible, similar objects should be brought to school and compared with well designed ones, stressing at this stage the patterns.

Next, the background to the creation of patterns may be discussed. At least one manufacturing process which includes

the production of patterns should be described, with pictures and diagrams if possible. The production of printed fabrics would be a good example. Comparison with older methods is important and should be made wherever possible. Pictures 3 and 6 on pages 16-17 show the intimacy which formerly existed between craftsman and material. Picture 2, on page 16, suggests that each worker was also quite well acquainted with other parts of the process.

Patterns can be translated into different media, if the character of each is allowed to assert itself. A basic design, derived from a photograph of a bundle of straw (6), will change its appearance as it is applied to a carpet (3) or to a fabric (4). Because this designer understood the character of each medium, he constructed the pattern differently in each case to bring out the best in both.

pages 24-25

EXERCISES

pages 24-25

As in Chapter 1, observation and recording, both visual and verbal, are needed for the exercises. Drawings can be diagrammatic and should be considered only as a means of conveying information and ideas. Even if other pupils think them 'inartistic' or 'ugly', if they are efficient in their context they should be encouraged.

The exercises in this second chapter require something more than the observation demanded by the exercises at the end of Chapter 1. Judgment is now called into play. Pupils are asked to decide which patterns and materials are in a harmonious relationship. They must decide between harmony and chaos. Two sham patterns (8, 9) are shown as random examples, and many more examples should be found by the children. The two pieces of sculpture (5, 7) demonstrate that the same principles apply to 'works of art' as to 'useful' objects, a distinction which would not have been recognised in past ages.

The considerations discussed in this chapter offer a very wide field for discussion. For instance, wood engravings and wood-cuts can be examined to see how they are produced. Wood-cuts, which are produced with a different tool from wood engravings (knife instead of graver) on what is virtually a different material (side grain instead of end grain) show a different general pattern from wood engravings. A study of

the engravings of Thomas Bewick and the wood-cuts of Albert Dürer (although executed by a wood-cutter and not Dürer himself) show how each artist exploited the characteristic patterns of his medium.

We can also look at modern paintings and see how the painter has used the character of his materials and tools to create patterns which are in keeping with them. The surface pattern of a painting may be produced by brush, palette knife, drip can, or a natural reaction of the pigments on each other. In each case the relationship between method and pattern will be discernible, just as much as in pottery. These patterns are not accidental; they are an integral part of the work and can be appreciated only through a knowledge of the method and the material. Wood engraver, wood-cutter, painter, potter and sculptor marshal their resources to produce patterns in keeping with their materials and methods, but these patterns must also serve the various functions of wood engraving, wood-cut, painting, pottery and sculpture. The processes of art in all its forms can be seen to be basically the same.

Chapter 3 Patterns from our surroundings

Our surroundings have a great influence on the patterns we produce. The new fields of vision opened up by science have greatly enriched our visual vocabulary. Abstract patterns are derived from our environment.

This chapter examines the effect of man's surroundings on his patterns. What we are depends to some extent on the visual impact our surroundings make on us. The patterns we make express our response to this impact as well as to the demands of the materials we use. pages 26-28

A pattern-maker must be familiar with the shapes, the objects, the motifs with which he works. They are his visual vocabulary which he manipulates skilfully. His patterns can be fully understood only by those who know his language; otherwise, like a poem in a strange tongue, they will be meaningless. This applies in a wider sense to all works of art.

Patterns in different parts of the world are different even when they are executed in the same or similar materials. Our response to the materials at our disposal is pretty much the same the world over, but since different surroundings give different vocabularies for men to express themselves the patterns must vary. This is self-evident, but considering how little attention is paid to it it is well worth re-stating. In museums we can see many objects decorated with patterns derived from the artists' natural surroundings, the fauna and flora with which he was familiar, in colour schemes which looked right in their own background and which the artist understood. Often such patterns are imitated in other environments, by people who do not understand the vocabulary, and they are admired by others equally unfamiliar with it. Is this insensitivity or insincerity?

Abstract patterns too must in the first place have been derived from actual visual impressions, which for a variety of reasons were transformed. The ivory necklace (4) makes use of observed shapes adjusted to the needs of the material. The artist must have decided that simple smooth shapes would look best in this material and would bring out its character. But by leaving out all the inessentials and stressing everything which he thought important he also enhanced the character of the bird shapes. Their birdness is purer. Each single shape is the outcome of these two processes (abstraction pages 29-31

of shapes, relation to material) working together to the same purpose, and the whole necklace is the sum total of these relationships multiplied many times. These principles can also be seen at work in much of modern sculpture. Abstraction can go much farther, as some of the pictures on these pages show, and it is not always possible to discern the starting point, but in one way or another our surroundings will always be found to have supplied the original visual impulse.

Abstraction is really a means to an end and we must judge it by how well it achieves its purpose: to emphasise what is essential. The abstraction of spearhead money (and money made in other forms until comparatively recent times) serves as a means to greater efficiency, and the London Underground map (page 31, 5) achieves greater clarity and so greater efficiency. It is for these reasons that we find abstraction as an ingredient in the art forms of all ages. When Picasso speaks of 'A still life with leeks' as having failed if it does not smell of leeks, and then proceeds by means of abstraction to make his still life reek of leeks, we must approve the method even if we do not like the odour. Abstraction without purpose is pointless. In some cases, where abstraction is used for its own sake and without an understanding of its true function, it can obscure the real meaning of the object or pattern.

pages 32-33

In our own day man's surroundings have been considerably enriched by new visions of science, revealed by powerful microscopes, telescopes, cameras and so forth. The laws of the physical world which produce the beauty of landscape and flowers, of organic and inanimate shapes and patterns, apply equally to these new visions made possible by science. There is no reason why they should not give us as much pleasure, as they become part of our visual background. These new visual realities have added greatly to our visual vocabulary which in turn has affected the patterns we produce and indeed the face of all the visual arts.

page 34 EXERCISES

The wallpaper, 1, is based on a photographic enlargement of a piece of embroidery. Enlargement on this scale is accepted as part of our new visual language. Even if we did not know the origin of this design—and most users are probably un-

aware of it—it would still strike us as a modern pattern. It is unlikely that any earlier age in history, unaccustomed to the vision of science, would have accepted it. Both method and attitude are modern. One of the patterns, 3, shows definite, if imaginary, living things. The other, 2, is an abstraction, but its origin can still be detected. The making of an abstract pattern, exercise 5, or more than one if possible, is an important activity for the reader. The abstraction of the basic shape should help in the construction of the pattern, but at the same time the essential character of the object, whether plant form or animal or even something revealed by the microscope, should be stressed.

SUMMARY OF FIRST THREE CHAPTERS

At this stage it may be found useful to sum up the subject matter contained in the first three chapters: Patterns are caused by materials and are also deeply influenced by the pattern-maker's background. Abstract patterns originate in familiar objects. Science is today providing a wider visual background than man has ever had before.

This would also be a good moment for a museum visit. Various patterned objects can be judged as pieces of craftsmanship. Has the material been used appropriately? Does the pattern interpret the artist's surroundings? Industrially produced objects, perhaps assembled by the class, can be examined in the same way.

Chapter 4 Town and country patterns

The patterns of the countryside are related to the character and climate of the country. Industrial patterns are too often wilfully imposed on the natural patterns of the country, thus creating disharmony.

pages 35-44

The patterns of building and countryside are shown to be the outcome of the efficient use of materials.

In pre-Industrial Revolution times, and even today in under-developed countries, man had to coax the forces of his natural environment into working for him and carrying out his plan. He could pursue only the kind of agriculture which soil and weather would allow, and he laid out his fields and ordered his way of life to suit the conditions nature had imposed. This in turn demanded a very definite kind of building usually executed with 'stones from the lifted earth'. This meant that the appearance and the function of the buildings was closely related to the landscape. This natural harmony did not stop at the structure of buildings and the patterns of cultivation, but produced entirely different local traditions and spread inside the houses, often into the smallest details. Furniture, utensils, tools expressed the character of the raw materials of a region, and even where the function was the same varied extensively from those of other regions. For instance, beech chairs assumed different shapes from ash chairs.

These natural and logical developments conditioned the likes and dislikes of the inhabitants, beyond the mere forms of their buildings and the objects they made. The colours of local raw materials influenced their colour sense—even where a wider choice was available. Yet within this framework a great deal of individual freedom and variation existed. Not all ash chairs looked alike.

When the things man makes are closely related to his background they will satisfy our definition of a good pattern: one in which all the elements are in harmony. This, together with the organic patterns of nature itself, accounts for the pleasantness of those rural scenes as yet unaffected by the machine.

pages 44-47

When modern transport facilities made it possible for cheap bricks to be introduced to areas poor in clay deposits, where hitherto bricks had been little used, the harmonious

pattern of the English countryside received its first jolt. With the cheap bricks came the speculative builder, who neither cared for nor understood the nature of the country, or its inhabitants. The change-over, brought about by commercial pressure, began to destroy the natural patterns. It is no longer as easy as it used to be to guess the geology of a region from the appearance of towns and villages. This process continues and accelerates. Bricks will in their turn be ousted by still cheaper and more efficient materials, even farther removed from the countryside where they are used.

The Industrial Revolution changed the natural patterns of the landscape by super-imposing its own reckless pattern. For the sake of apparent efficiency large parts of the countryside were ravaged and converted into vast nightmarish conurbations: the industrial no-man's-land, which was neither town nor village. The nineteenth-century developer was not in sympathy with the nature and character of the countryside and felt no qualms in mutilating it. The inhuman industrial patterns bequeathed to us by the nineteenth century are monuments to many insensitive and even brutal acts, which resulted in the disruption of man's relationship with nature. The pattern which was the natural outcome of this relationship was destroyed and replaced by one totally lacking in harmony and meaning. The resulting chaos is only the outward manifestation of political and social forces. In an attempt to restrict interference from municipal authorities and the power of the state, the notion of *laissez-faire* was in the nineteenth century given the status of a creed. 'Without design' was a laudatory term in Victorian times. The notion of relationship was destroyed. As Lewis Mumford writes, 'rational planning could, it was supposed, only interfere with the higher workings of a divine economic providence'. The town, flower and pride of earlier ages, was considered little more than a 'fortuitous concourse of atoms—held together temporarily by motives of self-seeking and private profit'.

Later in the course other aspects of the Industrial Revolution will be touched on, but for the time being if we confine ourselves to a consideration of the destruction of natural patterns of town and countryside we very soon come up against the causes of our present visual chaos.

The fact that today we are using modern materials and modern methods does not give us an excuse for disfiguring what little countryside we have left. Walter Gropius relates how he built his first house in the U.S.A. 'I made it a point to absorb into my own conception those features of the New England architectural tradition that I found still alive and adequate. The fusion of the regional spirit with a contemporary approach to design produced a house that I would never have built in Europe with its entirely different climatic, technical and psychological background. I tried to face the problem in much the same way as the early builders of the region had faced it when, with the best technical means at their disposal, they built unostentatious, clearly defined buildings that were able to withstand the rigours of the climate and that expressed the social attitude of their inhabitants.' There is a whole creative world contained in this statement, yet it is a sobering thought that two or three hundred years ago such a statement would have been superfluous and dismissed as a self-evident truth. Houses built in this spirit must look and 'feel' right in their settings, even if surrounded by buildings of earlier centuries with their different techniques. Towns, villages and industrial installations built in this spirit would add as much as the best of their predecessors of past ages to the character of the countryside and the needs of the people who inhabit it.

Compare Gropius' creative attitude to his surroundings to those who seek the 'charm' of past ages in the recreation of old patterns which have no genuine relationship to modern conditions. The pseudo-Georgian house, built with a steel frame, is as inharmonious, inefficient and therefore ridiculous as a Gothic building would be in the tropics.

page 49 EXERCISES

Similar purposes and similar materials will produce similar patterns. The remarkable similarity between Cornish and Yorkshire cottages is due to the presence of a common material, granite. Any stretch of country will have its own character based on these and other considerations: for instance the dominant industry of an area. An almost abstract linear pattern can describe this character adequately and can

be a more effective summary than a photograph. Children should attempt to construct such a pattern to demonstrate the character of the countryside or town with which they are familiar. Some of the more adventurous and visually more alert will perhaps be able to do this also of landscapes which they can remember, perhaps from those seen on holiday. In each case the visual pattern should be accompanied by a verbal explanation or description of its causes and nature.

Such an exercise is difficult and the teacher will judge whether members of the class are ready to attempt it. In any case it must be adjusted to the abilities of different pupils. An essay with diagrammatic illustrations will be one possibility. Numerous descriptive sketches linked by a short narrative will be another. The scope for work of this nature is endless.

Chapter 5 The same and yet different

Nature's patterns show unity within diversity. If man-made patterns are to be harmonious and satisfying, they must be constructed in a similar way.

pages 50-56

This chapter is straightforward and self-explanatory. It gives further reasons for the importance of harmonious man-made patterns. Nature allows infinite variety within a strict framework of unity. If our man-made world is to have any meaning at all it must conform to the general principles upon which nature revolves. Man needs harmonious patterns as a basic condition of existence, if he is to lead a satisfying and full life.

We may consider the three types of building, 1, 2, and 3, pages 50, 51, as symbols. Streets of monotonous buildings which look as though they had rolled off the conveyor belt are as unnatural to human beings as are chaotic streets in which many artificial and senseless styles are in conflict. Ideally the patterns of human surroundings should follow nature's patterns, but that does not mean that we should copy those patterns. The patterns of towns, for instance, can have the harmony of organic shapes, like trees, and at the same time be efficient towns. The shape of towns, whose function it is to contain human beings, should reveal this function clearly, just as every organic shape shows its function. This theme will recur throughout the course, and even at this early stage a preliminary discussion of the reasons for bad man-made patterns should be attempted, in the light of the contents of this chapter. The apparently machine-made building, 1, and the chaotic one, 2, in which no two windows are alike, represent different kinds of atrocity, both too often seen. Even affluent 'architect designed' neighbourhoods show many of the same faults as nineteenth-century industrial towns. Carefully laid out gardens, marbled woodwork, pretentious wrought iron gates and other disjointed clichés attempt to smoothe over the underlying chaos, but the harmful effect on human beings is in no way lessened.

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Exercise 1 can be expanded indefinitely and may be

related to biology lessons. Pupils are asked to distinguish variations in similar objects and to describe them by writing and drawing.

Exercises 2, 3 and 4 come to the heart of our dilemma. Before the era of mass production it was much easier for an individual to express himself in accordance with nature's law: unity within diversity. The introduction of standardisation and other mechanistic principles which came with the Industrial Revolution seemed to do away with those variations of basic shapes through which individuals had been able to express themselves. The various attempts to reassert the importance of the individual crystallised into the Romantic Movement. By retreating into the romantic past and imitating earlier styles people thought they could escape the stranglehold of the present. That this was no solution is shown by the chaotic environments they produced, patterns which were as far removed from the organic patterns they aspired to as from the industrial patterns they sought to replace.

Chapter 6 A half way chapter

A chapter which sums up and expands much of the material so far dealt with.

pages 57-58

If machine products are to have any meaning at all they must be guided by human intelligence and sensitivity; then our response to them will be comparable to our response to craft-produced objects.

In Part Three of the course we shall discuss the problem of human design, *ergonomics*, which attempts to relate the new techniques to human needs. Much research is carried out by scientists, but ultimately the human control of machine-made shapes and patterns is an artistic activity. It represents a task of enormous complexity and subtlety for architects, product designers, gardeners, textile manufacturers, engineers, town planners and many, many more.

pages 59-61

Only through art can man-made things and the whole of our human environment be made really efficient. Alberti, one of the most important theorists of the Italian Renaissance, defines beauty as 'a certain regular harmony of all the parts of a thing of such a kind that nothing could be added or taken away or altered without making it less pleasing'. This definition certainly satisfies the artist's ideas of beauty but it would also be understood by the engineer in the context of efficiency. A mechanism is at its most perfect when any further interference with its working parts or their relationships would make it work less well. When judging the patterns of our environment we should remember Alberti's principle.

Efficient patterns, as we know, must be related to their materials: for example, brick-work, basket-work, patterns of soil cultivation. The pattern of the plastic beaker, 1, on page 22, so efficient in basket-work, is inefficient in plastic. Pupils should find other examples of this kind and perhaps suggest how the patterns could be adapted in order to remain efficient in a new material.

page 62

Knowledge of one medium often arouses interest in another where a similar structure or similar principles are recognised. The patterns of music and of poetry have obvious affinities to the patterns of visual experience. The patterns of scansion, the devices by which a poet may break the monotony of a

repeating pattern (compare machine patterns) and his methods of changing ready-made words to fit them into the pattern can easily be shown. Musical patterns can also be appreciated. The graphic visualisation of a printed score will help here. Even people who cannot read music will gain a far greater insight into the structure and pattern of music if they can look at a score while listening. Quite difficult music can be assimilated in this way.

We now return to the idea that our surroundings are a generating influence on the patterns we make. Not only are the superficial surroundings of people in different parts of the world different from each other, for example the vegetation of the country and the clothes of the inhabitants, but society and the organisation of society also vary. The atmosphere and the mental climate are different in different communities, and within the same society there is a marked difference between different periods. This influences the formation of patterns, and in a wider sense, of all art. *pages 63-64*

Background and mental climate influence patterns, but patterns are also linked to their materials. The pattern of a page of Chinese writing is very much expressive of the materials used by the scribe. The chart of development, 1 shows how the original symbols were gradually adjusted to the character of the writing materials. Likewise the 'writing' of Rembrandt's drawings was automatically adjusted to the materials he used. The pen drawing, 3, is different from the brush drawing, 4, because he used each in its most efficient form in relation to his personality. *pages 65-66*

EXERCISES

page 67

Exercises 1, 2, 3 and 4 deal with patterns caused by their material background. The native huts make the best use of their materials; by bending and plaiting the reeds the greatest rigidity and economy is obtained. A hut made of flat, unplaited panels must be structurally weaker. Multicolour marble churches are natural in a country which abounds in this material.

The purpose of exercise 5 is to demonstrate the usefulness of abstraction. Picture 11 gives an impression of speed and safety. The precision of the shape make the idea of failure

almost impossible. Picture 12 on the other hand is closer to the original bird shape, but less certain as an image of modern air transport, often powered by jets. Here the excessive use of graceful lines seems to work against the real purpose of the abstraction.

Exercise 6 could be answered with examples from the evolution of most things. The pattern of spokes on wooden wheels contrasted with the patterns of wheels made of metal pressings and of bicycle wheels is a good instance of changed patterns due to a change in materials. Others are the pattern of net bags made of string, knotted together and compared to plastic 'string' bags extruded in one piece (often used in marketing of oranges), the comparison of brick patterns to those of reinforced concrete, of ships made of long wooden planks to those made of steel plates riveted together, etc.

Exercise 7 might be supplemented by examples again in writing and drawing of both old and modern man-made things which do not disfigure the countryside.

Chapter 7 Recognising character

Character as the opposite of average. Recognition of character is essential for an understanding of our surroundings. Caricature is an exaggeration of character.

Many people fail to recognise those differences, often slight, which make up the individual character of basically similar things. Harmonious patterns are often based on such small differences. We have seen that comparison between equal things is pointless and, between entirely different things, as in the chaotic pattern (6) on page 13, impossible. It is therefore essential, if we are to appreciate our surroundings, that we train ourselves to recognise the small differences which make up character. Literary training in character study is familiar but the visual aspect of character is not normally considered educationally important. It will be seen that these two views complement each other in daily life and that the one can never be considered complete without the other. *pages 68-69*

Pattern as a means of showing character is of course of great importance in looking at works of art, and not only contemporary ones. Visits to art galleries would be a very valuable addition to class work at this stage, but, where neither a suitable museum nor art gallery is within reasonable distance, reproductions—the larger the better—will fill the gap. A good plan would be to ask the pupil to describe a picture and then to explain in what way the character of any one part, or group of objects, was stressed. Posters of actual places may be useful, as comparison may be made with photographs. Attention should be drawn to the fact that an abstract picture may contain more than one view of an object combined into a pattern for the purpose of enhancing its character. *pages 70-71*

The idea of caricature, the exaggeration of character (*but not its distortion*), plays its part in sharpening perception by distinguishing between what is essential and what is not. *page 72*

EXERCISES

pages 72-73

These are designed to encourage discernment of visual

character. Literary caricature certainly links up with the explanation of visual caricature and provides an exercise in another medium employing the same or very similar principles. First of all some typical and telling examples of literary caricature should be read and discussed. Dickens abounds with suitable pieces. Then a 'straight' description of a person well known to the pupil (a friend, a relative) should be attempted, and this should certainly take in his manner of doing things, of moving about or speaking, or anything else which might describe his character, those aspects of his personality which make him different from other people. The next stage would be to turn this description into a caricature, but the principles of caricature must be strictly observed if the exercise is to be valuable in sharpening the pupil's perception. Only those features which contribute to a person's character should be picked out and enlarged. Finally, the two methods of expression, literary and visual, should be used together. The visual part should, as in previous occasions where there has been a joint use of writing and drawing, take the form of simple, almost diagrammatic representation which need show no more than the observation and understanding of character. The employment of a mixed technique of recording will eventually get the pupil into the habit of observing more carefully and more widely than he would otherwise do. Familiarity with the method will help him to respond more fully to his environment, and in this case, will give him a more complete appraisal of character.

Children may need guidance in answering question 7. What is required is that they should realise that the character of people's handwriting differs just as people themselves differ.

Chapter 8 Nature's patterns

Nature's patterns are functional; we find the laws of mathematics embodied in them.

The patterns and shapes, the natural engineering, of the living world, should now be examined. It should be noted that it is not always possible to distinguish between the pattern and the shape of natural objects.

Obviously, this part of the course would benefit if it could be done in conjunction with biology classes, although to follow a pre-arranged plan may not be the most productive method: Pupil's individual search for the patterns of nature will throw up many unexpected items, which for one reason or another may be of greater interest than any previously prepared material. Patterns found at random in the country or in parks, at any time of the year, can be of absorbing interest. Leaf patterns, the structure in depth and the surface pattern of tree barks, seed boxes, etc., should not be difficult to obtain, and a microscope should be used whenever possible. In addition, photography will prove of great help. Some excellent books are available, which combine good photography with an interest in natural forms. (See suggestions on page 54.)

All these studies will be of little avail if the visual impact is confined to lessons only. Nothing acts more on the imagination than the unconscious effect of our surroundings. It is not nearly enough to understand the argument of this chapter, to examine the pictures of natural shapes and patterns and then to put the book away. Pupils should be constantly reminded of such structures as can be seen in the photographs in the chapter. Actual objects or photographs should be displayed wherever possible, on shelves in classrooms, in glass cases in corridors, on notice boards or display boards. By such means the children will gradually develop an instinctive understanding of the main point of the chapter: the functional aspect of nature. They will realise that in nature the simplest and most efficient method is always attempted if not always achieved, the minimum material employed, and so on.

Man-made shapes now tend to follow the tenets of functionalism which govern the development of natural shapes.

pages 76-77

Even the patterns of modern shapes are linked to their purpose. The man-made world is beginning to emulate the world of nature, if not always in appearance, then at least in principle and intention. Patterns wilfully imposed on man-made shapes belong to another era, to a moribund way of thinking. There can be no finer training ground for *experiencing* the modern man-made world than the domain of natural, logical shapes and patterns. The mind which has been educated to understand the reasons for the honeycomb pattern of a beehive, the structural patterns of leaves and bones, will eventually begin to find meaning in man-made patterns inspired by similar needs.

We must aim to look at a building, a motor car, a radio set, a chair, with an enjoyment which is based on an understanding of its function. Only then shall we be able to choose what is good from what is bad; only then will our judgement have any value. We must learn to demand of man-made forms the perfect relation to function which characterises organic forms and patterns.

As an important part of this course is concerned with the function of man-made objects, it would not be amiss to start comparing them with natural objects at this stage. The material studied and the availability of suitable sources will determine these comparisons. Sometimes a chance photograph in the press or in a magazine will show some similarity with a natural object which is already on display; actual machine parts which might be obtained from a breaker's yard, will, if suitably displayed, assume an elegance of their own. Even if their shapes, patterns or purposes are unlike anything found in nature, the similar processes at work in the creation of both man-made and natural shapes will soon emerge. Such collections of objects and pictures should be constantly added to, and from time to time objects should be changed. Although they must be given enough time to be effective, they should not be allowed to become stale. Here again active participation of all the pupils is most desirable.

Children should be encouraged to take up photography, which provides great opportunities for individual visual expression. Reasonably good cameras are no longer prohibitive in price; close-up lenses can be bought for as little as five

shillings. Film can be bought economically in lengths instead of cassettes. Developing and printing can be done quite cheaply. Enlargers often cost more than the camera, but one is sure to be found to be available if extensive enquiries are made among members of staff, and if that fails, among parents. That there are obstacles to such a scheme cannot be denied, but these lie largely in the newness of it. Photography offers no greater difficulties and is no more expensive to pursue, than, say pottery. The advantages are manifold. An object photographed by a pupil, either individually or as a member of a team, will have far greater significance than an admittedly better professional photograph. It will force him to look harder than he normally does in order to extract as much as possible from it. Discussion of work produced will add to his understanding of the subject matter. Enlargements pinned on display boards will make their mark. By concentrating on principles rather than on likenesses, such photography, whether of trees or oil refineries, will help the children to express themselves in visual terms and to understand not only this chapter but the whole course.

Other activities to suit individual requirements will suggest themselves to teachers.

EXERCISES

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If no suitable objects can be found as answers to exercise 2, comparisons using photographs in the book will perhaps lead the way. Good comparisons would be:

radiolaria (5, page 82) and roof structure (7, page 59)
structures of fibres (1, 2 page 82) and expanded metal (4, page 4)
sea shell (6, page 79) and staircase (4, page 127)
scallop shell (a common shape) and French market (back endpaper)
bone structure (1, page 32) and metal trusses, scaffolding, etc.

Exercise 4, the comparison of the spirals, is an exercise in the recognition of character. The first spiral (Archimedian) is even and almost placid; it does not seem to contain any latent energy. The second spiral (equiangular, logarithmic) on the other hand, is dynamic; it seems to symbolise growth

and strength. One might prefer the first because it covers a flat surface easily, the second because of its latent movement.

Leonardo's text, 7, page 83, written with his left hand and reading from right to left in mirror inversion says 'Observe, the motion of the surface of the water which resembles that of hair, which has two motions, of which one depends on the weight of the hair, the other on the direction of the curls; thus the water forms eddying whirlpools, one part of which is due to the impetus of the principal current and the other to the incidental motion and return flow'. An artist, in trying to understand his environment will analyse the phenomena he perceives, but this will never be a purely material analysis. Even though in this case Leonardo examined the mechanical laws which caused the patterns, like all artists he was interested in the emotional content. Although this time not expressed in words, we can see that Leonardo tried to understand the patterns in the old man's drapery, but he did this by visual means. He examined the way in which the solid forms of the man's body influenced the patterns, which were also caused by the tension, the slackness and the weight of the cloth, and further modified by the foreshortening, i.e. perspective.

Chapter 9 Solid patterns and light

Patterns created by light and shade: their part in design and architecture

Many patterns which we see in everyday life are three-dimensional, that is to say they consist of raised shapes which give a light-and-shade effect. Such patterns consist of two patterns in one, both of which it is necessary to recognise. These three-dimensional patterns serve as a transition from pattern to form. Any pictorial work of art contains a linear or flat pattern. This is the composition of the work. To this is added the tonal scheme, often, but not always, made up of the *chiaroscuro* (light and shade) of pattern-producing objects. Where the work is in colour, there is yet a third element, the composition of colour. These three elements, all patterns in their own ways, are combined into one homogeneous unit. We must not imagine that each pattern is arrived at independently. They are all created simultaneously in a completely related and harmonious scheme in the artist's mind. However, analysis of patterns helps us to understand the artist's intentions.

EXERCISES

page 92

Pupils will find some difficulty in tracing the linear pattern of picture 3 for exercise 1, but the pattern is everywhere implied and could be completed as each pupil understands the implications. When the tonal scheme is studied it will become clear that the linear scheme is much enriched by it. Note how it is designed to highlight the main characters, and how it helps to dramatise the action by illuminating the accuser's hand, while a subsidiary light source illuminates a parallel but obviously less important action. Some figures are painted light in tone against a dark background, others show up dark against a lighter background. Some figures are broken up by the effect of light. Some of the stairs are almost hidden by the shadows in the foreground, others break into the light. There is everywhere this constant interplay of patterns. Other exercises similar to this one could easily be devised. Some children who are visually more developed will probably want to distinguish between different tones. This should

of course be encouraged as much as possible, so long as the true object of the exercise, the tonal pattern, is not buried by attempts at representation.

Exercises 2 and 3. Most three-dimensional patterns can be transformed beyond recognition by changing light. This happens all the time and is part of the rhythm of the day; as the sun describes its course it changes the appearance of everything we see around us. This adds an extra dimension to our world; instead of simply seeing 'a tree' we see 'a tree at three o'clock in the afternoon'. This extra live quality is missing from objects which have only one kind of static illumination. To exclude daylight completely on any pretext can only destroy a natural, harmonious rhythm. Once again this change in the appearance of things can be described by a combined graphic and literary effort. Snapshots should certainly be admitted to exercise 2, where they are relevant.

Chapter 10 Experiencing form through sight and touch

Experience of form and its creation

We are now entering the realm of form proper. All forms, *pages 94-96* whether pebbles or skyscrapers, should arouse a sensuous response in us—in fact this is the only way of experiencing form. In many people this response is unfortunately non-existent or exists only in an atrophied version, so that forms cease to have any meaning or function. An unrealised form, an unfelt form, a form seen as a silhouette, is a dead form. The roundness, the texture, the smell, the presence, the ‘feel’ of a form are its essential attributes, without which it can hardly be said to exist. We shall see that forms may be shaped by a number of different influences and requirements but in the final analysis it is the sensuous experience which makes us like or dislike a form. Naturally, our experience of very large shapes cannot be tactile, and must be reached through our imagination. This, however, does not alter the principle.

The potter creates shapes with his hands as much as with his eyes; he thinks with his finger tips and feels with his eyes. *page 97* Vision and touch act as correctives on each other. His vessel must be experienced by us in a similar way if we wish to understand the whole of the meaning, by hand and eye in unison.

Handles are meant to be touched and seen, but they are not often experienced in this way by their designers. Certainly the old-fashioned door handle (1, page 98) was not experienced by its designer, it is a purely intellectual form. It must be remembered, however, that most tools are held in many different ways by the different users, and often even by the same user, so that the best shape will be a compromise between the different uses. The handle shown in 2 and 3 is an excellent compromise. *pages 98-99*

EXERCISES

page 101

The exercises test the understanding of the need to experience form. This need applies to both the designer and the

user. The redesigned press is mechanically and functionally sounder than the earlier press; its designer has kept the needs of its users in mind. It also has sensuous qualities which show that the designer has experienced it as an overall shape. Exercises 2 and 3 will help children to understand that an ability to experience form is essential if they are to judge the design of objects which they see around them. Some objects are the result of incompetent designing, are not suitable for their purpose, and do not feel or look right. Others attempt to create an impression of smartness or of luxury to increase their saleability—the actual shape is often ungainly and makes the proper use of the object impossible.

The handles and tools fit together as follows:

	scissors	sickle	ski stick	leather knife
<i>page 99</i>	4	5	6	7
<i>page 101</i>	7	8	5	6

Chapter 11 Seeing all round

To understand a form we must experience it from different angles. Satisfactory forms create satisfactory patterns in our minds.

A flat pattern is static, form can be described as dynamic; it is never still. As the modern artist has found out, it can only be fully experienced through the fourth dimension, that is to say, not all at one moment. A well-shaped tool or other small object will make us want to experience it all round with our hands. Good sculpture, motor engineering, architecture, or furniture design will induce us to walk round the object for similar reasons. As we experience different aspects of the form, it unfolds and declares its true character. Anyone who has walked round a piece of sculpture will know this unique experience, which cannot be transmitted in words.

If we look at any form from one viewpoint only, we miss the greater part of its meaning. Unfortunately, many people look only at the front of the many forms which surround them: buildings, furniture and so on. This habit encourages designers to concentrate on one aspect only, without considering the *whole* form.

EXERCISES

page 112

Exercise 4 is in many ways the most important, for it deals with the main theme of this course: In the man-made world man is the measure of all things. The things we make should be harmonious, according to our definition (page 104); but they should also harmonise with each other. This will create an overall harmonious pattern, which will accord with the needs of man. Natural patterns and shapes are harmonious. Inharmonious patterns offend not only against nature but also against man.

Chapter 12 The patterns and forms we need

Summing up of Part One. A discussion of the patterns and forms necessary for a harmonious human environment, from simple implements to whole towns

This chapter is a general summing up and stresses the importance of relationships as the basis of visual experience.

pages 115-17

The birds (5, page 115) show many different positions of which their mechanisms are capable, seen from different angles. They therefore have something in common and satisfy our definition of harmonious pattern. The bouncing ball (6, page 115) goes through a number of harmonious stages which are all derived from the same basic shape. The hexagonal shapes in the children's playground (7), identical in section, create likewise a harmonious pattern. Many more such instances can be found in nature. A harmonious pattern, such as 5 on page 116, could be produced from other parent patterns, as an additional exercise. This is best carried out with tracing paper which will allow both patterns to be seen at once, similar to picture 4. Shapes like 6, multiplied by cutting out several sheets of paper at the same time and using the leaf pattern as well, could be arranged in a harmonious overall pattern without worrying too much over repeats. These exercises are not meant simply to generate skill in pattern-making, but to show in graphic form the idea of harmonious relationship generally.

pages 122-23

These pages show a number of objects which have a certain similarity, not so much in appearance, but because similar attitudes (if such a word can be used in connection with the natural shapes) are apparent. Pictures of this nature should be exhibited side by side wherever and whenever possible. The captioning could be a communal effort.

pages 124-25

The objects illustrated here give a glimpse of our opportunities thanks to the scientific and technological means at our disposal. There is no need for a machine civilisation to be inhuman. Quite the opposite is true. We have the power, if we wish to use it, of creating near-ideal conditions for human beings, such as the civilisations of the past could not even have dreamt of.

The exercises are suggestions for the kind of work which could be undertaken upon completion of Part One. Picture 1 shows an abstraction derived from the qualities of the material employed. Rarely have so few brushstrokes been made to do so much work or has ink been so exploited. Through his incredible virtuosity Picasso describes here the actions he understood so well in a medium of which he is the complete master. Compare his mastery over his materials with that of Henry Moore, pages 106-7, or the Gothic and Greek builders (5, 7, page 91) or the potter, page 17.

Picture 2 is an abstraction inspired by different reasons. Here Picasso has at once penetrated and dissolved the illusion of reality to give us a powerful description of a state of emotion, just as picture 1 gives us a description of movement. If a photograph of a weeping person is available it could be compared with this painting to show up its effectiveness, considering the artist's intentions. Notice how hands and face are combined in one tragic shape, the direction of the movement of tears continued by the finger-tips of the woman's left hand. Eyes, tears and creases form one desperate pattern; an isolated tear has burnt a channel through this seared face, a scar which will remain forever, for here the face not only *reflects* states of mind, it is both face and mind so that events which are not easily realised in the material world can be portrayed with precision. This picture combines emotion with reality to an extent seldom seen in the past. It is both analytical and passionate; it is an emotional tool *par excellence*.

Picture 3 shows the patterns Leonardo observed in nature but they are presented in an abstract, almost diagrammatic form, so that the urgency of the central idea, the force and rhythm of the Deluge, is not diluted by immaterial secondary observations. The power of this drawing lies in the fact that its essence is stripped bare and worked into the extremely efficient pattern. A comparison with a photograph showing a similar event will make this efficiency even clearer.

The external staircase of the UNESCO building (exercise 2, picture 4) is an integral part of its structure, as in an organic shape, and not an unpleasant afterthought as in picture 5.

The rush baskets (page 128) follow the patterns which make the most efficient use of the material which they have in common.

Pictures 4 and 5, page 128, show dishonest patterns. They do not help to express the material or the function of the objects which they 'adorn'. This exercise anticipates Part Two.

Conclusions

We have now reached the end of the first part of Looking and Seeing, and we must summarize our conclusions.

The adjustment of the carburettor of a petrol engine is performed by turning a screw controlling the intake of both air and fuel vapour into the combustion chamber. When the relative proportions of either constituent are wrong the engine will not work well and may even stop altogether. But when they are correct, that is, when their relationship is correct, the engine will run efficiently and harmoniously. The difference lies in the adjustment of the screw. This seemingly simple task cannot be performed by anyone; few people apart from mechanics are able to carry out the adjustment to perfection. The artist, and this term, let us repeat, may include the architect, the engineer, the town planner, the product designer, has to make a similar adjustment before his 'engine' will run harmoniously and efficiently. This tying together, relating of forces already in existence is at the core of all artistic activities. The shapes and patterns of the man-made world should be the outcome of this searching for the best possible mixture, the right relationships between everything that is known to the artist. Painting pictures and building railway stations are basically the same activity: the relating of different entities. Both relate materials, shapes, structures, patterns, colours, etc., to human needs. We are not always aware of these needs, in fact most people would be surprised to find how many human needs are responsible for the shape of a railway station. The needs which are satisfied in a painting are also not quite clear to most of us, yet both painting and station are determined by material, functional and psychological factors and the mental

climate of the times. It can therefore be seen that artistic activity is confined within fairly narrow terms of reference. Much of it is governed by circumstances beyond the artist's control.

The architect of a railway station was asked by the present writer why he designed his station in a particular shape. He replied, 'It *had* to be this shape. No other shape would have been possible'. The mechanical efficiency of the station, the movement of passengers, the site, the materials employed, the new methods of prefabrication, the requirements of lighting, change-over from the old facilities to the new while the station was still in use, the habits, and behaviour of the users of the station, and many more factors were all responsible for the shape of the station, but they were all processed, sifted and related in his mind, through his ingenuity, sensitivity and imagination. The element of free choice was very small indeed. (Remember that different architects or designers working within the same limitations may still produce different but equally successful solutions.)

Natural shapes and patterns arrived at through the long process of evolution, have an inevitability about them which makes it impossible to imagine how any other shape could have satisfied all the demands imposed on it, in a manner as efficient. The greatest of man's works also have this inevitability, this feeling of uniqueness for a particular set of circumstances, a *deus ex machina*, the only possible solution. Had anyone asked Rembrandt why he painted a certain painting in that particular way his answer would not have been so different from the railway architect's.

FOR FURTHER READING

Of the many books of photographs of natural forms *The Anatomy of Nature* by Andreas Feininger (Thomas Yoseloff) is probably the best. Here a famous photographer (with an architect's training) has looked at nature's engineering. This is not merely a collection of pictures: the photographer's approach to his subject is fully explained in the introduction and the captions. The technical section at the end of the book will be found of great value where photography of this nature is attempted. Less pictorially attractive but more fundamental is *On Growth and Form* by Sir D'Arcy W. Thompson (Cambridge University Press). This would make additional and background reading for all stages of Looking and Seeing and is more fully referred to in the Teacher's Notes to Part Three. *The New Landscape* by Gyorgy Kepes (Theobald) contains a wealth of photographic material illustrating some of the new visual concepts of our age. Most of the pictures are primarily of scientific interest but they all share a visual significance. *Vision in Motion* by L. Moholy Nagy (Theobald) was the first comprehensive manifestor of art and design in the twentieth century. It still remains the best introduction to the principles which dominate all creative visual thinking. Finally *Design Magazine*, the journal of the Council of Industrial Design, and that of the Architectural Press, *Architectural Review*, should always be at hand. Both are published monthly. The scope of *Architectural Review* in particular is very wide and extends well beyond the frontiers of 'pure' architecture. The many excellent photographs, whether looked at individually or on display boards, will make a real contribution to general education.

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